635.9
2etw

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Project | Date | Author RMO

TITLE

FOREST INSECT SURVEY - SISKIYOU AND FALL RIVER AREA

SHASTA NATIONAL FOREST, CALIFORNIA

Season of 1941

Annex 1
SB
763
.C2 S5
1941

By
Philip C. Johnson
Berkeley, California
January 31, 1942

U.S. GOVERNMENT PRINTING OFFICE 8—9742

SUBJECT—

INDEX No.—

Forest Insect Laboratory
Berkeley, California
January 31, 1942

FOREST INSECT SURVEY - SISKIYOU AND FALL RIVER AREA
SHASTA NATIONAL FOREST, CALIFORNIA
Season of 1941

APPROVED BY:

J. M. MILLER
Senior Entomologist, In Charge

SUBMITTED BY:

P. C. JOHNSON
Assistant Conservationist

FOREST INSECT SURVEY - SISKIYOU AND FALL RIVER AREA
SHASTA NATIONAL FOREST, CALIFORNIA
Season of 1941

INTRODUCTION

The 1941 forest insect survey covered the eastern part of the Shasta National Forest and vicinity, in particular the Siskiyou and Fall River reporting areas established by the forest insect hazard inventory in 1938 and 1939. The field work of the survey was done in the Siskiyou Area during the period September 9-13, and in the Fall River Area during the period October 16-22, 1941. Information on bark beetle conditions was obtained in the cutover and virgin stands of the Siskiyou Area and in the virgin pine stands of the Fall River Area. No serious outbreaks of other insects were found to have occurred in these two areas up to the time of the survey. Loss conditions in two other Shasta areas - Harris Mountain and Burney - will be covered in separate reports of the Berkeley forest insect laboratory.

The field party for the survey consisted of Junior Field Aide W. M. Bennett, Assistant Field Aide R. L. Tweedie, and the writer. The expenses of the survey and the salaries of the temporary men were largely covered by an allocation of funds by the Forest Service. Accommodations made available at Tennant, California by the Long Bell Lumber Company and at Pondosa, California by the McCloud River Lumber Company greatly facilitated the work of reaching all the areas included in the survey.

SAMPLING METHODS

Insect-caused losses in selectively-cut pine stands in the Tennant and Wild Horse Units (see map) were sampled by three small plots established in 1934. An attempt was made this year to obtain loss estimates from scattered virgin pine stands in the Shovel Creek, Goose Nest, Horsethief, Tennant, and Wild Horse entomological units, some of which were shown by the hazard inventory to be suffering from active beetle infestations. This was accomplished by installing six new road strips. These were located in sufficient detail to permit their use as permanent samples.

In the Fall River Area logging operations have reduced the number of permanent 320-acre sample plots to two and the 1941 survey augmented these by three new road strips.

The chief value of the present samples in both areas is to indicate the course of the infestation in representative stands. They are inadequate, however, as a basis for estimating within reasonable accuracy the total beetle-caused losses in the several entomological units. To permit this would require an increase in the number of samples and a corresponding increase in the cost of the survey. This does not appear to be justified because the extent of virgin pine is not great and it is scattered in relatively small lots throughout the reporting areas. Also, the utilization of this timber is being accomplished at a rate rapid enough to diminish the effectiveness of estimating losses in terms of broad areas in the manner of an inventory.

CHARACTER OF THE 1941 INFESTATION

Siskiyou Area

An analysis of the data obtained from the samples shows (Table 1) that a definite increase in the bark beetle infestation was obtained in the uncut pine stands of the Siskiyou Area during 1941. At the time the survey was made (September 1941) the measured 1941 loss had already exceeded the total 1940 loss and yet the former was estimated to represent only about 62 percent of the total loss for the year. On this basis the average 1941 loss in this area would probably reach 66 board feet per acre, an increase over 1940 of 106 percent.

It is not believed, however, that the 1941 loss actually represents an increase as high as this because the 1940 loss measured by the samples is probably low. Tests in similar timber on the Modoc National Forest soon after the Siskiyou survey showed that, on 1941-established road strips, there was a marked tendency to include too few trees in the 1940 loss. This was principally because the crown deterioration in trees killed during 1940 was so great by 1941 that the spotters judged some of them to have been killed prior to 1940 and hence did not include them in the tally of 1940 trees. This is a fault likely to occur in any new sample, but it disappears if the sample is measured at least once each year.

In terms of the number of trees and the board-foot volume killed by beetles, the Wild Horse Unit appears to be most heavily infested during 1940 and 1941. The sample (RD-2, Table 1) used here is indicative of conditions in a small stand of fringe-type ponderosa pine between the main railroad line of the Long Bell Lumber Company and the southern boundary of the Lava Beds National Monument. Beetle activity has been severe in past years and it has resulted in the death of a goodly portion of the merchantable stand. Further losses of this nature will soon lower the value of this stand to the point where its utilization will not be profitable. Since this stand already bears a very high beetle hazard rating it seems desirable to salvage the remaining timber by a cutting program which would remove a very high percentage of the stand.

The same infestation conditions exist in the small stand of uncut pine on Wild Horse Mountain and the same treatment is recommended for it.

The only other serious situations in virgin pine are in the Shovel Creek and Tennant Units. Here, the trees are large and the relatively few infested trees account for a considerable board-foot volume. No concern is felt, however, as current logging operations of the Associated Lumber and Box Company and the Long Bell Lumber Company are located in these two areas and it is likely that the stands will be harvested before further extensive losses occur.

It is encouraging to note that during the past two years the Long Bell Lumber Company took steps to utilize some of the high beetle hazard timber on the slopes of Miller Mountain and Little Deer Mountain in the Goose Nest and Horsethief Units. By this action a greater return in timber values was undoubtedly realized than would have been possible from the same area several years hence since both areas contained a considerable volume in high risk trees.

Fall River Area

In general, the 1941 infestation in virgin stands appears to be about 34 board feet per acre, approximately one-third lower than that of the preceding year (Table 1). The decline in losses was most noticeable, and certainly most welcome, in the Cayton and Lava Units where, in 1940, losses were in excess of 100 board feet per acre. While no measured samples were obtained from the Clark Creek Unit, reconnaissance showed losses from insects to be as low, if not lower, than those sampled in the Dickson Flat Unit (RD-7, Table 1).

LOSSES IN CUTOVER STANDS

In the Siskiyou Area the three cutover plot samples (CO-1, 2, and 3) covered each year by the survey were strengthened by the addition of two new road strip samples (RD-1, 5). Together these indicate the infestation conditions now current in areas which were cut under some form of selection cutting which resulted in the leaving of an appreciable pine volume. The Lower Sheep Well plot, CO-1, in the Wild Horse Unit, continues to suffer what, in a cutover stand, amounts to an epidemic condition that is continuing to wipe out the reserve stand. It is expected that the 1941 infestation will increase slightly to about 32,530 board feet per section (51 b.m. per acre). An increase in insect-caused losses was also noted in plot CO-2 a few miles north of the town of Tennant. The other three cutover samples (CO-1, RD-1, RD-5) showed practically no losses from beetles in 1940 and 1941.

In the Fall River Area one sample strip (RR-9) was run through a recently-cut Forest Service timber sale area on the southwest slope of Soldier Mountain in the Dana Unit. The 1941 pine loss was estimated by this sample to be about 15 board feet per acre, largely the result of a 9-tree group killing on the strip. It is believed that, for the area as a whole, the 1941 loss will be somewhat less than the above figure though still above the 1940 loss of 3 board feet per acre.

SPECIAL AREAS

At the request of District Ranger O. L. Barnum of the Pit River District, Shasta National Forest, an examination of insect damage was made in a small area of about 2000 acres of virgin and cutover pine in Hot Spring Valley between Day P. O. and Pittville. This is a marginal stand that has been heavily depleted by bark beetles within the past 15 years. Little loss from beetles occurred, however, in either virgin or cutover stands during 1940 and 1941 as will be seen:

	Per Acre Pine Loss	
Year	Virgin	Cutover
1940	14 b.m.	5 b.m.
1941	11 b.m.	4 b.m.

This low current loss figure is partially due to previous heavy infestations having thinned the stand to the extent that it is not capable of supporting the heavy per acre losses it once did.

RECOMMENDATION FOR CONTROL

Present infestation conditions anywhere in the eastern part of the Shasta National Forest do not warrant beetle control measures providing: (1) that current logging operations continue in the direction they appear to be headed, and (2) that immediate utilization be made of the virgin stands lying between Cinder and Cougar Buttes in the Wild Horse Unit. The latter is aimed solely at salvaging the remaining timber values before further depletion by beetles occurs.

TABLE 1. VIRGIN PINE TIMBER KILLED BY BARK BEETLES ON SAMPLE PLOTS AND STRIPS
Eastern Shasta National Forest and Vicinity

Reporting Area and Infestation Unit	Sample Symbol (*)	Sample Timbered Acreage	Total 1940 Loss Per Section No. of Trees	Total 1940 Loss Per Section Volume b.m.	Total 1940 Loss B.m. per Acre	Cruised 1941 Loss Per Section No. of Trees	Cruised 1941 Loss Per Section Volume b.m.	Cruised 1941 Loss B.m. per Acre	Cruised 1941 Loss Probable % of Total 1941 Loss
SISKIYOU AREA									
Shovel Creek	RD-6	160	24	41,000	64	24	54,440	85	65
Goosenest	RD-4	285	4	898	1	2	7,298	11	65
Horsethief	RD-3	549	19	26,287	41	15	24,131	38	55
	RD-5	193	6	6,931	11	6	12,899	20	65
Tennant	RD-1	59	--	---	--	11	58,576	92	100
Wild Horse	RD-2	91	91	52,255	82	49	54,435	85	65
Average of Above Area			18	20,371	32	14	26,092	41	62
FALL RIVER AREA									
Dickson Flat	RD-7	160	12	18,720	29	4	11,280	18	85
Cayton	SH-4	320	66	79,900	125	18	23,320	36	83
Dana	RD-8	160	--	---	--	4	21,200	33	
Lava	SH-9	320	84	68,360	107	32	20,200	32	85
Wiley Ranch	RD-11	160	36	15,160	24	12	10,400	16	86
Average of Above Area			50	47,200	74	17	18,560	29	85
AVERAGE OF ALL SAMPLES			33	32,600	51	15	22,659	35	72

* Symbols: RD, road strip; SH, plot.

TABLE 2. SPECIES OTHER THAN PINE KILLED BY BARK BEETLES ON VIRGIN SAMPLE PLOTS AND STRIPS
Shasta National Forest and Vicinity
(Per Section Basis)

Reporting Area and Entomological Unit	Sample Symbol (*)	Sample Timbered Acreage	Tree Species	Total 1940 Loss No. Trees	Total 1940 Loss Volume b.m.	Cruised 1941** Loss No. Trees	Cruised 1941** Loss Volume b.m.
SISKIYOU AREA							
Shovel Creek	RD-6	160	White Fir	4	200	4	440
Horsethief	RD-3	549	White Fir	1	46	-	---
Tennant	RD-1	59	Red Fir	-	---	10	10,304
FALL RIVER AREA							
Dickson Flat	RD-7	160	White Fir	12	21,520	4	1,840
Cayton	SH-4	320	White Fir	2	2,000	-	---
			Incense Cedar	6	1,940	-	---
			Douglas Fir	16	12,590	-	---
Dana	RD-8	160	White Fir	4	2,560	8	3,920
Lava	SH-9	320	Incense Cedar	4	4,620	-	---

* Symbols: RD, road strip; SH, plot.
** Approximately 62 percent of total 1941 loss in Siskiyou Area, 85 percent in Fall River Area.

TABLE 3. PONDEROSA PINE TIMBER KILLED BY BARK BEETLES ON CUTOVER SAMPLE PLOTS AND STRIPS
Shasta National Forest and Vicinity

Reporting Area and Entomological Unit	Sample Symbol (*)	Sample Timbered Acreage	Total 1940 Loss Per Section No. of Trees	Total 1940 Loss Per Section Volume b.m.	Total 1940 Loss B.m. per Acre	Cruised 1941 Loss Per Section No. of Trees	Cruised 1941 Loss Per Section Volume b.m.	Cruised 1941 Loss B.m. per Acre	Probable % of Total 1941 Loss
SISKIYOU AREA									
Horsethief	RD-5	302	2	106	0.2	--	---	--	
Tennant	RD-1	206	--	---	--	--	---	--	
	CO-2	93	20	2,339	4	20	2,403	4	60
	CO-3	160	--	---	--	--	---	--	
Wild Horse	CO-1	160	76	27,120	42	56	19,520	31	60
Average of Above Area			16	4,982	8	12	3,634	6	60
FALL RIVER AREA									
Dana	RD-9	160	16	2,080	3	36	8,200	13	85
AVERAGE OF ALL SAMPLES			16	4,549	7	15	4,316	7	64

* Symbols: RD, road strip; CO, plot.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT HAZARD INVENTORY
HAZARD CLASSIFICATION

SISKIYOU AREA
SISKIYOU COUNTY, CALIFORNIA

OREGON
CALIFORNIA

L E G E N D

- Hazard II — Low
- Hazard III — Moderate
- Hazard IV — High
- Hazard V — Very High
- Cutover
- Boundary of Entomological Units

SCALE
0 1 2 3 4 5 6 MILES

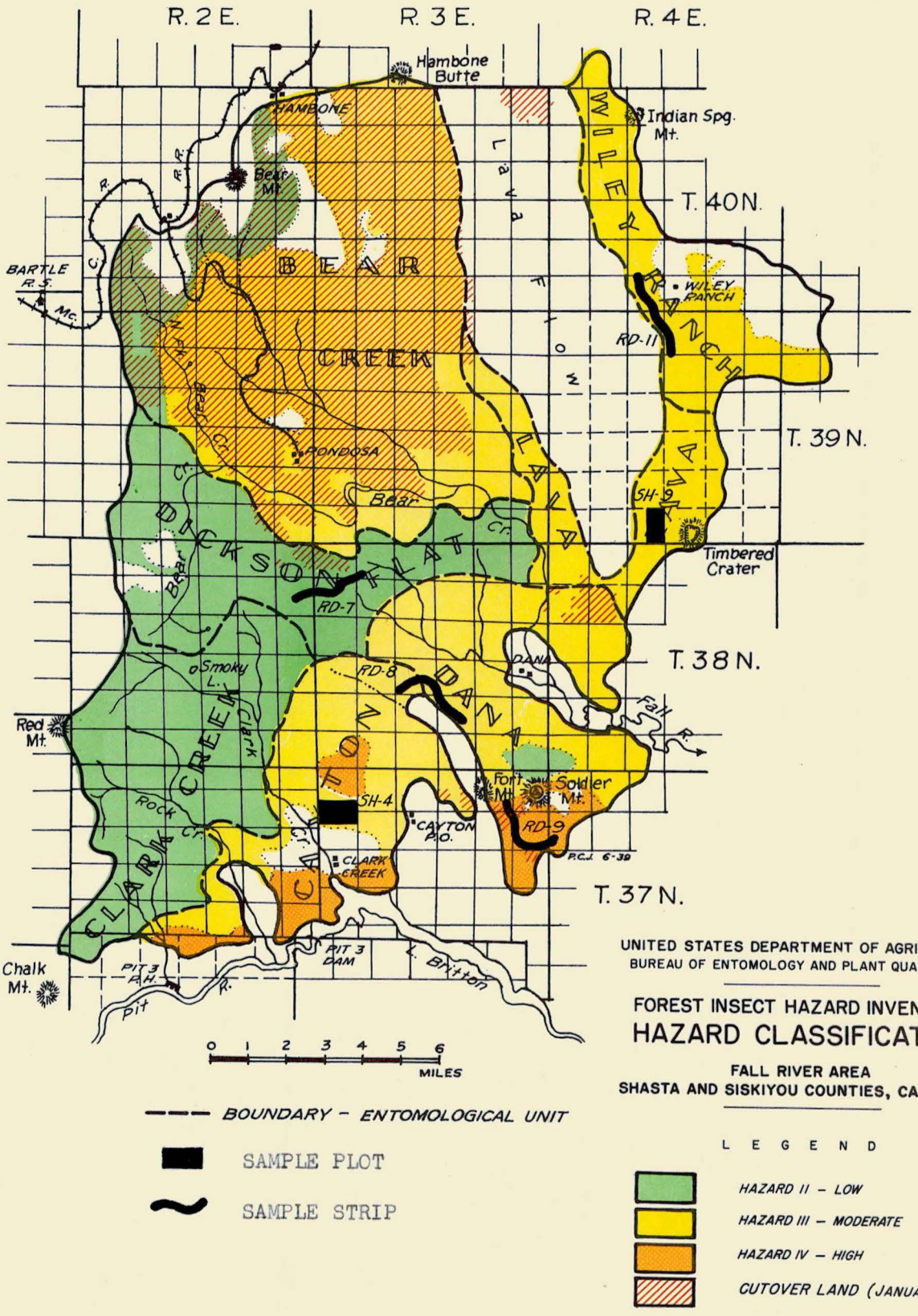
1939

Sample Plot
Sample Strip

T. 47 N. T. 46 N. T. 45 N. T. 44 N. T. 43 N.
T. 42 N. T. 41 N. T. 40 N
R. 3 W. R. 1 W. R. 1 E. R. 2 E. R. 3 E.

SHASTA RIVER
GOOSE NEST
HORSETHIEF
TENNANT
WILD HORSE
HARRIS MT
PORCUPINE BUTTE

Beswick
Copco Lake
Klamath River
Shovel Cr.
HESSIG RANCH
SPANNUS RANCH
Secret Spg.
Secret Spg. Mt.
TRANSMISSION LINE
McGowin Cr.
RD-6
BEAR CANYON R.S.
Eagle Rock
Kes Mt.
Steep Trail Cr.
CABIN Cold
KUCKS CABIN
MEISS RANCH
Willow Cr. Mt.
OLD MARTIN DAIRY
Ball Mt.
Panther Rock
MT. HEBRON R.S.
Mt. Hebron
PRATHER RANCH DITCH
BRAMSTEAD WATER HOLE
ICE CAVE
Red Rock Valley
SMITH MILL
MILLS RANCH
Smith Spg.
RD-5
Goose Nest
JEROME
OLD JEROME MILL
OLD HOFFMAN MILL
DAVIS CABIN
Hebron Mt.
GRAVEL PIT
Little Deer Mt.
Horsethief Butte
Orr Mt.
Orr Lake
PENOYAR
Round Valley
Tecnor
Cedar Mt.
Snare Mt.
Antelope Butte
RD-4
GRASS LAKE
RD-3
Deer Mt.
Rose Spg.
Double Spg.
EDSON-FOULKE
Cold Spg.
Dry L.
Gorner Butte
CO-2
CO-3
TENNANT R.S.
Tennant
RD-1
CO-1
LOWER SHEEP WELL
Wild Horse Mt.
Brammer
VAN BREMMER WELL
UPPER SHEEP WELL
DOCK WELL
TAMARACK WELL
Gorner Mt.
BRAY WELL
BLACK LAVA FLOW
Cinder Butte
RD-2
Calahan Spg.
Indian Butte
Mt. Hoffman
Badger Pk.
GLASS FLOW
Arnica Sink
Medicine Lake
MEDICINE L. R.S.
Little Mt. Hoffman
Crystal Spg.
Medicine Mt.
Pumice Stone Mt.
SHEEP SPG.
Sheep Rock
COUGAR
Shingle Spgs.
Alder Cr.
Pomeroy Butte
ANDESITE
Black Crater
Haight Mt.
Grasshopper Flat
Shotgun Pk.
Chimney Crater
Six Shooter Butte
Twin Crater Mt.
Papoose Hill
ICE CAVE
Powder Hill
Snag Hill
Deep Crater
HARRIS SPG. R.S.
Harris Mt.
Porcupine Butte
Toad Mt.
Lookout Pt.
TOAD WELL
Buck Mt.
SLAGGER CAMP
HAMBONE
Hambone Butte
MAYFIELD R.S.
MAYFIELD ICE CAVE
ELKINS MILL
PUMPING STATION
Bear Mt.



UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT HAZARD INVENTORY
HAZARD CLASSIFICATION

FALL RIVER AREA
SHASTA AND SISKIYOU COUNTIES, CALIFORNIA

L E G E N D

- HAZARD II – LOW
- HAZARD III – MODERATE
- HAZARD IV – HIGH
- CUTOVER LAND (JANUARY 1, 1938)